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Objective: There is a relatively wide consensus that veterans' posttraumatic stress symptoms (PTSS) may lead to the development of secondary traumatization (ST) among their spouses. However, there is limited knowledge about the way the ST develops over time, as well as its predictors. The current longitudinal study examined ST trajectories among spouses of Israeli war veterans with PTSS, as well as the contribution of veterans' PTSS and wives' assessment of veterans' PTSS to these trajectories. ***Method:*** Data were collected from both spouses at 3 time points, 30, 35–37, and 42 years after the 1973 Yom Kippur War (2003, 2008–2010, and 2015, respectively). ***Results:*** Using multiple-group Latent Class Growth Analysis (LCGA), we identified 4 distinct ST trajectories. The majority of wives (68%) were in the resilient group, 12% were in the recovery group, approximately 10% were in the chronic PTSS group and another 10% were in the delayed-onset group. Multinomial regressions revealed that veterans' PTSS predicted the 4 different trajectories among their wives. In addition, wives in the recovery and chronic groups who perceived their veteran husbands' PTSS to be higher also reported higher ST. ***Conclusions:*** This study highlights the complexity of the development of ST trajectories over time. Findings supports the idea of PTSS contagion, and reveals the contributing role of both objective and perceived levels of veterans' PTSS in ST. Therefore, implementing interventions aimed at alleviating both individual and couple-level distress may be warranted.

Clinical Impact Statement

Following participation in war, more than a quarter of veterans suffer from posttraumatic stress symptoms, such as intrusive dreams, high anxiety, and anger outbursts. These symptoms often also affect their spouses. The current longitudinal study examined the trajectories of spouses' distress, veterans' PTSS, and wives' assessment of veterans' PTSS. The findings suggested that spouses display 4 patterns of symptoms over time, parallel to what has been found for primary trauma survivors: resilient, chronic, delayed and recovered. These findings validate the need to recognize both the resiliency and vulnerability of the significant others of trauma survivors. Moreover, there is a strong association between veterans' and spouses' distress, highlighting the need for couple-based interventions. Posttraumatic stress disorder (PTSD) is known to be the most prevalent mental health disorder following combat exposure (American Psychiatric Association, 2013). The lifetime prevalence rate of PTSD in combat veterans has been found to reach up to 31% (Bergman et al., 2017; Petrie et al., 2018), with as much as 40% of those with PTSD suffering from a chronic disorder (Santiago et al., 2013). Many more veterans suffer from posttraumatic stress symptoms (PTSS) and, although PTSS do not constitute an official PTSD diagnosis, they are nonetheless debilitating. Posttraumatic stress symptoms are often associated with other comorbidities, including depression (Nichter et al., 2019a) and difficulties in daily functioning (Nichter et al., 2019b). Furthermore, these symptoms often have a ripple effect on others close to the veteran, including one's spouses and children. Spouses of war veterans with PTSS constitute a high-risk population for psychological difficulties. Previous studies have reported high levels of emotional distress, including anxiety and depression, among wives of war veterans with PTSS (Lambert et al., 2012), as well as marital problems, such as low intimacy and domestic violence (Taft et al., 2011).

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Studies have suggested that spouses of war veterans with PTSS experience not only general distress but also specific PTSD symptoms. In other words, an individual not directly exposed to trauma may nonetheless develop specific posttraumatic symptoms (i.e., nightmares, intrusive thoughts, flashbacks, arousal and changes in mood) after learning of a traumatic event indirectly through someone who

experienced the event. This description captures secondary traumatization (ST) in its narrower sense (Galovski & Lyons, 2004). Indeed, the diagnostic criteria of PTSD in *DSM–5* includes indirect exposure —such as learning that a close friend, relative, or spouse was exposed to trauma—as an explicit criterion for what constitutes a traumatic event (APA, 2013). Indeed, rates of PTSD among spouses of war veterans have been found to range between 10% (Dekel et al., 2016; Renshaw et al., 2008) to 23% (Renshaw, Allen, et al., 2011).

Despite recognition of this phenomenon in *DSM–5*, a few challenges remain. First, existing studies are mostly cross-sectional. This results in a lack of knowledge about the development of ST and PTSS and the changes that take place over time. Although direct trauma survivors' long-term PTSS reactions have been found to consistently follow four trajectories—chronic, resilient, recovery, and delayed-onset (Bonanno, 2004) – little is known about temporal symptom patterns among indirect survivors. Thus, the first goal of the current study is to promote knowledge about the development of these symptoms and to identify Israeli spouses' PTSS trajectories based on three measurements that toll place following the 1973 Yom Kippur War, accompanying through the years of maturation.

The second challenge relates to the predictors of ST symptoms over time, and the mechanisms through which spouses' ST develops. Three possible mechanisms have been previously suggested. First is the classic perception of ST, which suggests that living with and being close to someone who suffers from PTSS is associated with an increased likelihood of being "infected" with PTSS. In this way, empathizing with and being willing to care for and help trauma survivors who experience PTSS can become overwhelming and infectious over time (e.g., Nelson Goff & Smith, 2005). In other words, living with a spouse who suffers from PTSS is not only associated with general distress, depression, or anxiety—symptoms that are also typical of other mental disorders—but rather with a specific and unique PTSS contagion.

Indeed, previous studies have found a link between veterans' PTSS and the severity of their spouses' distress. For example, an earlier study conducted by our group among former prisoners-of-war found that the more severe the husbands' PTSS, the more at-risk the wives were for ST and other psychiatric symptoms (Greene et al., 2014). In addition, a study of Iranian military veterans found that the severity of their PTSD predicted the degree of ST in their wives (Ahmadi et al., 2011). This correlation has also been found among other samples (Gallagher et al., 1998) and cultures (Taft et al., 2011). However, it is clear that a correlation between husband and wife's PTSD is not sufficient in order to fully understand of the contagion mechanism.

The second mechanism through which spouses' ST may develop relates to the possibility of bidirectional contagion. According to Bowen's theory (MacKay, 2012), people with an optimal level of differentiation are able to maneuver between intimacy and autonomy to maintain a sense of well-being. They are able to do so without feeling overwhelmed and sacrificing their needs or losing their autonomy and identity (Bowen, 1978). Living with a husband who has PTSD and constantly requires help, protection and support and who also does not necessarily fulfill his spouse's expectation of being supportive, a breadwinner and a parent, impairs the wife's capacity to preserve self-differentiation (Dekel, 2010).

Hence, it may not be the veterans' symptoms alone that contribute to the wives' distress, rather it is in part due to her unmet expectations and the way in which she perceives the PTSS. A partner or

spouse has two potential sources of information upon which to base estimations of a veteran's PTSS. First is the veteran's verbal report of what he or she is experiencing, and the second is the spouse's observation and perception of the veteran's behavior (Gallagher et al., 1998). Moreover, there is a range of PTSS, with certain manifestations potentially having more impact on a spouse's life and distress. For example, avoidance and emotional numbing symptoms (e.g., diminished interest in activities) may include less conspicuous externalized behaviors than reexperiencing symptoms or hyper arousal symptoms. Moreover, irritability and rage might exert stronger effects on daily and family relations and be uniquely associated with spouses' ST (Lambert et al., 2012).

As people differ in the meanings they attribute to another person's distress and behaviors, partners' attributions of their husbands' symptoms could play an important role in their own level of distress. Specifically, when partners attribute symptoms as part of an overall posttraumatic disorder that arose due to external events (e.g., combat experiences), they may be less distressed by these symptoms. Conversely, if partners attribute symptoms as arising from the veterans' internal, dispositional tendencies, they may be more likely to develop ST (Renshaw et al., 2010). These perceptions, are also associated with their attitudes toward engaging in the recovery process and asking for and/or being part of a professional help (Barrowclough et al., 2008).

Indeed, several studies have supported the association between wives' marital satisfaction and perception of their partners' source of symptoms. Wives who attributed their husbands' PTSS to internal causes were found to be more likely to report lower marital satisfaction overall, with a stronger association between the two (Renshaw et al., 2014). However, it should be noted that the cross-sectional nature of the data excludes the possibility of causal inference.

Finally, an additional source suggested to account for a partner's secondary distress relates to one's personal history of stressful life events. These events may be directly associated with a partner's higher reported distress or effect the relationship of the couples, potentially hampering communication and intimacy. This association has received support from two cross-sectional studies. Although there was a significant association between the PTSS of both spouses, the studies also found that wives' earlier traumatic events were associated with their higher PTSS (Dekel et al., 2016). Another study showed that wives acknowledged that events in their own lives may have contributed to their PTSS (Renshaw, Blais, et al., 2011). One possibility is that the veteran's PTSD evoked the partner's past trauma and led to a resurgence in her PTSS. Indeed, in a prospective study of police officers and their spouses, officers', spouses' ST was predicted by their own baseline depression and perception of PTSS in the officer (Meffert et al., 2014). Perhaps partners are reminded of their own traumatic experiences as they watch the veterans struggle with their PTSD. This joint struggle between the two may maintain and fortify the partner's distress. However, to date there has been a lack of research on the role of spouses' previous traumatic events in this regard.

Based on previous literature, the current study's first goal is to identify Israeli spouses' ST trajectories based on three measurements, spanning 12 years, following the 1973 Yom Kippur War. The second aim of the study is to understand the factors that contribute to spouses' ST. Namely, the aim is to identify to what degree the spouses' ST trajectories are predicted by the veterans' PTSS, the spouses' perception of the veterans' PTSS, and the spouse's own

traumatic history. Considering these three sources, creating a comprehensive picture, taking into account spouses' own direct exposure, and indirect exposure through spouses' perceptions.

Method

Participants and Procedure

The current dyadic study is part of a longitudinal study of Israeli combat veterans from the 1973 Yom Kippur War and their wives. Data were collected from both spouses at three different measurements 30, 35–37 and 42 years after the 1973 Yom Kippur War in 2003 and 2008–2010 and 2015, respectively. Upon receiving approval from the institutional review board of Tel Aviv University, the wives were contacted and written informed consent was obtained. The questionnaires were administered at the participants' homes or another location of their choice. Further information regarding the overarching veterans' study procedure can be found in Solomon et al. (2018). Further information regarding the wives' study procedure can be found in Greene et al. (2014).

A group of 520 veterans of the 1973 Yom Kippur War, some of whom were in captivity, were drawn from the Israel Defense Forces computerized databanks. In 2003 (time 1, T1) 308 veterans participated, in 2008–2010 (time 2, T2) 301, and in 2015 (time 3, T3) 259. At T1, 213 of the 308 participating veterans were married and 156 of their wives (73.2%) agreed to participate in the study. At T2, 250 of the 301 participating veterans were married and 172 of their wives (68.8%) agreed to participate. In T3, 224 of the 259 participating veterans were married, and 184 (82.1%) of their wives agreed to complete the questionnaires. More information regarding the attrition and addition rates can be found in Solomon et al. (2018). Wives' missing data were 27.1%, 20% and 11.6% in T1, T2 and T3, respectively. Little's (1988) Missing Completely at Random test (MCAR) was used to examine potential bias due to missingness and revealed that the missingness in the data was not related to the observed data, $\chi^2(63) = 63.23$, $p = .45$. Missing data were completed using Maximum Likelihood in the Mplus Structural Equations Modeling (SEM).

Demographics

Data were anchored to include wives who participated in at least two measurements ($n = 155$). The age of the veterans at T2 was $M = 58.23$, $SD = 5.23$ (range 53–84) years. At T3, the age of the veterans was $M = 65.23$, $SD = 5.32$ (range 60–91) years. The age of the wives at T2 was $M = 58.23$, $SD = 5.23$ (range 53–84) years. At T3, the age of the wives was $M = 61.90$, $SD = 5.63$ (range 47–81) years. On average, veterans obtained $M = 13.9$, $SD = 3.9$ years of education and wives obtained $M = 14.90$, $SD = 3.27$ years of education. The couples were married for a duration of $M = 34.20$, $SD = 9.08$ years and had an average number of children of $M = 3.23$, $SD = 2.89$. For further demographic information regarding the veterans, see Solomon et al. (2018), and for the wives, see Kapel Lev-Ari et al. (2020).

Measures

PTSD Inventory

Wives' ST and veterans' PTSS were both measured across the three time points via the PTSD Inventory (Solomon et al., 1993), a 17-item self-report scale. Veterans' PTSS were obtained by asking them to rate their posttraumatic symptoms as related to their captivity or war experience. Wives' ST scores were obtained by asking the wives to rate their own posttraumatic symptoms in relation to their husbands' experiences of combat or captivity (e.g., "When I see or hear things that recall my partner's captivity, I have more severe sleep disturbances or oversensitivity to noise"). Wives also rated their husbands' PTSD from their perspective.

In all three measurements, the participants were asked to indicate whether they had experienced the symptom in the past month, on a four-point scale ranging from 1 (not at all) to 4 (I usually did). An answer of 3 or above was considered a positive endorsement of a symptom. Wives' ST trajectories were derived from their ST status in each of the three measurements. Further explanation of the ST trajectories will be presented in the results section. The classification of PTSD was based on the *DSM–IV* symptom criteria (APA, 1994), which was the standard at the time of the beginning of this study. PTSS intensity was calculated as the sum of endorsed symptoms. Cronbach's alpha for veteran's PTSS, from their perspective and from their wives' perspective, was .91 to .96, respectively. The reliability of the wives' scales was also high for all assessments (Cronbach's alpha ranging from .92 to .94).

Negative Life Events Questionnaire

Wives reported (yes/no) the events they experienced from a list of 13 negative events (e.g., divorce, major disease, accident). This questionnaire was adapted from the questionnaire originally developed by Solomon et al. (1993). The total number of reported negative life events was used for the analysis.

Data Analysis

A person-centered approach was employed to examine ST trajectories among veterans' wives. This approach views the sample as comprised of multiple groups, with each group representing a different ST trajectory across the three measurements. The general Growth Mixture model (GMM) was used, as it allows groups to be heterogeneous. In addition, a multiple-group Latent Class Growth Analysis (LCGA) was employed to examine the multiple growth ST trajectories that exist within a population (e.g., Jung & Wickrama, 2008). Each trajectory represented a group (i.e., a latent class or profile) of homogenous wives who followed approximately the same growth curve of ST over the three measurements. The analyses were performed based on the continuous measure of ST severity at T1, T2, and T3. Hence, two latent factors were estimated: the intercept and the linear slope. These analyses were conducted using the Mplus statistical package (V.6; Muthén & Muthén, 2010). In the current study, the interval between assessments was unequal (T1-T2: 5 years, T2-T3: 7 years). Since LCGA is flexible in modeling time (Muthén & Muthén, 2004), we used factor loadings that corresponded directly to the time intervals (i.e., setting the first measurement point as 0 and the second and third measurements at 7 and 12, respectively). The factor loadings of the intercept of the ST growth trajectory were fixed to 1.0.

The number of groups of wives' ST trajectories (latent classes) that best fit the data was determined according to the Bayesian Information Criterion (BIC), Akaike Information Criterion (AIC), Lo-Mendell-Rubin likelihood ratio test (LMR-LRT), bootstrapped likelihood ratio test (BLRT), entropy score, and

average latent class probabilities of group membership (e.g., Jung & Wickrama, 2008). Specifically, the optimal number of groups was chosen based on: (a) the lowest BIC, sample-size adjusted BIC, and AIC scores; (b) significant LMR-LRT and BLRT tests; and (c) high latent class membership probabilities that were indicated by entropy values approaching 1 (Jung & Wickrama, 2008). On this basis, the optimal number of groups representing a specific wife's ST trajectory was decided across the study period and the group each wife belonged to according to their ST severity scores at T1, T2, and T3.

The LCGA results (probabilities of the group to which each wife belonged) were then exported to SPSS 25. Next, we conducted two multinomial regressions to verify whether the veterans' PTSS from both their own reports and their wives' reports could predict the four trajectory groups. For each wife a pattern vector was created by grouping all computed features from the factors of the veterans' PTSS. Life events of the wives were controlled for in both multinomial regression analyses. We separated the analyses into two regressions due to high collinearity between the veterans' PTSS as predicted by themselves and their wives.

Results

ST Trajectories Among Spouses of Veterans

Table 1 presents the results of the LPA with ST symptom severity. The 2-class solutions yielded significant BLRT and LMR-A tests, indicating that the fit of the 2-class solution was better than the single-class solution. This was also supported by the AIC and the indexes of the BIC. The 3- to 5-class solutions showed mixed results. The 3- to 5-class solutions yielded significant BLRT tests, indicating the best fit for the 5-class solution. However, the LMR-A was not significant in the 3- to 5-class solution, suggesting that the 2-factor solution fit the data best. BLRT is the statistical tool that performs the best of all the indexes. BLRT was chosen over the LMR due to its consistency in choosing the correct class model. Therefore, we continued to check the 3- to 5-class models using the BIC criteria. Among the different indexes considered in this study, simulation studies, aimed at examining which index was most reliable in determining the number of profiles, indicated that the BLRT outperformed the others. The second was the BIC, followed by the adjusted BIC. Finally, BIC indicated the 4-class solution as the best fitting model as the BIC in the 4-class solution was 10 points lower than the BIC in the 3-class solution. The reduction in BIC scores was greater than 10, which suggests "very strong" evidence that this model is a better fit than the higher BIC model (Rafferty, 1995). The 5-class solution had

a significant BLRT but showed only a 5point reduction in BIC, therefore this solution was not chosen.

Figure 1 shows the selected 4-class solution. As can be seen, most participants (68.4%) endorsed low and stable ST symptom severity over time ("resilient trajectory"). The second class had a "recovery trajectory" (12.1%) with high initial levels at T1 that decreased significantly over time. The third class had a chronic course of ST (9.8%), in which initial high levels stayed stable over time ("chronic trajectory"). The fourth class was similar in size to the chronic trajectory class (9.7%) and included participants with low initial levels that increased significantly over time ("delayed-onset trajectory"). The 5-class solution added one additional class, that was similar in delayed ST trajectory, though to a lower level of symptoms and included only few participants, thus, we chose the 4-class solution.

Predicting Wives' ST Trajectories

The Association Between Wives' Life Events and the Trajectories

Univariate analysis of variance showed that the ST trajectory groups differed in the number of life events experienced, $F(3, 150) = 13.48$, $p < .001$, $\pi^2 = .21$. Wives in the chronic ($M = 5.56$, $SD = 2.12$) and delayed ($M = 4.13$, $SD = 2.19$) ST trajectory groups reported a higher number of previous traumatic life events compared to those in the resilient ($M = 2.59$, $SD = 1.81$) and recovery ($M = 2.71$, $SD = 1.72$) ST trajectories.

Predicting Wives' ST Trajectories

Multinomial logistic regression analysis was conducted to calculate the adjusted ORs regarding the likelihood of ST trajectory class membership, compared to the resilient trajectory class (the reference group), due to exposure to life events/traumatic stressors and veterans' PTSS at T1, as reported by the veterans and their wives. As there are strong associations between veterans' PTSD as they report and her perception, the analytic plan included two multinomial regressions that examined the associations between the veterans' PTSS, as the independent variable, and ST trajectory versus resilient trajectory/reference group, as the dependent variable. The first regression examined the veterans' PTSS from their perspectives, while the second examined it from the wives' perspectives. Both regressions included wives' life events in the second step.
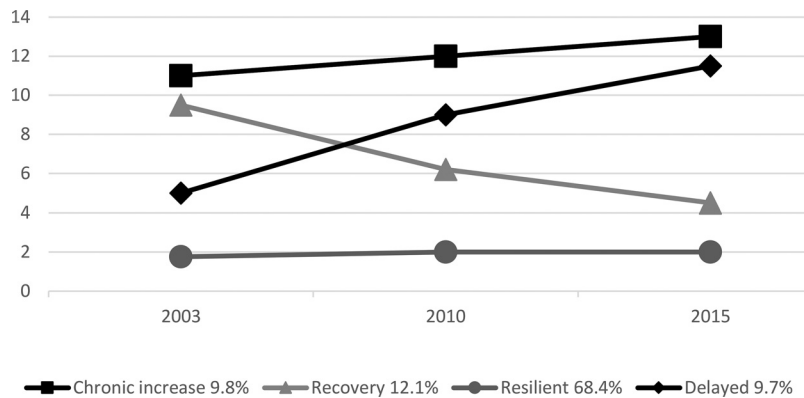
Veterans' T1 Reports of Their Own PTSS, Wives' Life Events, and Wives' ST Trajectories

The value of the parameter estimated by the multinomial model is shown in Table 2. The model found that delayed (OR = 1.01),

Table 1
Model Fitting Results for Latent Profile Analysis of Severity of Secondary Traumatization

Classes	Entropy	Aic	Bic	Adjusted BIC	Lmr-a Value	P value	Blrt −2LL difference	P value
1-class	1.00	2,453.48	2,477.83	2,452.50				
2-class	.90	2,407.62	2,441.10	2,406.28	51.86	.04	48.64	.03
3-class	.90	2,386.69	2,429.29	2,384.98	26.94	.14	25.27	<.001
4-class	.92	2,368.55	2,418.29	2,366.48	24.13	.18	22.63	<.001
5-class	.91	2,353.48	2,414.35	2,351.05	21.07	.16	19.76	<.001

Figure 1
The Four ST Trajectories Among Spouses of Veterans

recovered (OR = 1.217) and chronic (OR = 1.361) ST trajectories were associated with veterans' higher PTSS, as reported by the veterans. However, wives' traumatic life events were not associated with delayed (OR = 1.202), recovered (OR = 1.000) or chronic (OR = 1.371) ST trajectories.

Wives' Reports of Veterans' T1 PTSS, Wives' Life Events and Wives' ST Trajectories

The value of the parameter estimated by the multinomial model is shown in Table 3. The model found that recovered (OR = 1.268) and chronic (OR = 1.273) ST trajectories were associated with veterans' higher PTSS, as reported by their wives. However, wives' traumatic life events were not associated with the recovered (OR = .974) and chronic (OR = 1.310) ST trajectories. The delayed ST trajectory was not associated with the wives' life events (OR = 1.206) nor their reports of the veterans' PTSS (OR = 1.109).

Discussion

This study's goal was to gain a better understanding of the development of veterans' wives' ST. The expansion of the DSM criteria to include secondary exposure as a PTSD criterion highlights the importance of our study. Despite the growing knowledge regarding

the longitudinal course of PTSS and its predictors among direct survivors, the investigation of ST trajectories among relatives in general, and veterans' spouses in particular, scarcely exists.

As trajectories capture the heterogeneity of PTSS after potential trauma (Galatzer-Levy et al., 2018), they provide an alternative approach to a dichotomous diagnostic categorization and insight into different longitudinal patterns of adjustment (Bonanno, 2004). In line with findings among direct trauma survivors, our results revealed a 4-class trajectory solution. Most participants (68.4%) endorsed low and stable ST symptom severity over time (resilient trajectory). The remainder were divided between the recovery trajectory (12.1%), with high levels of ST at T1 that decreased significantly over time; a chronic course of ST (9.8%), in which high initial levels stayed stable over time; and the delayed-onset trajectory (9.7%), which included participants with low initial levels of ST that increased significantly over time. This distribution of the trajectories among spouses is consistent with the relative distribution of PTSD trajectories among Israeli veterans (Solomon et al., 2021). In both groups, the most prevalent trajectory was the resilient followed by recovered, chronic and then delayed trajectories. As could be expected, the PTSD of the veterans, who were direct survivors, was more prevalent and intense than their spouses, who were indirectly exposed.

As with direct survivors, the resilient trajectory was the most prevalent. This finding is in line with earlier studies indicating

Table 2
Multinomial Regression for Predicting ST Trajectories by Veterans' Reports of Their PTSS at T1 − the Estimate Values of Parameters (β)

ST trajectory	Variable	b	Sig	Exp (β)	95% confidence interval for Exp (β)	
					Lower bound	Upper bound
Delayed	Intercept	−2.280	.006			
	Life events	.350	.184	1.202	.817	1.768
	Veterans' PTSD	**.788**	**.015**	**1.015**	**.909**	**1.135**
Recovered	Intercept	−3.230	.001			
	Life events	.000	.999	1.000	.674	1.484
	Veterans' PTSD	**.197**	**.003**	**1.217**	**1.068**	**1.387**
Chronic	Intercept	−6.416	.001			
	Life events	.315	.243	1.371	.807	2.329
	Veterans' PTSD	**.308**	**.013**	**1.361**	**1.067**	**1.736**

Note. Standard errors and Wald's values, degree freedom (d.f.), *p* Values (Sig.) and odd ratios (Exp[β]), plus 95% confidential Intervals. *p* values < .05 are significant. Diagnosis is outcome variable with three levels. Bold letters mean statistical significance.

Table 3

Multinomial Regression for Predicting ST Trajectories by Wives' Reports of Veterans' PTSS at T1 − the Estimate Values of Parameters (β)

ST trajectory	Variable	b	Sig	Exp (β)	95% confidence interval for Exp (β)	
					Lower bound	Upper bound
Delayed	Intercept	−2.563	.001			
	Life events	.188	.348	1.206	.816	1.784
	Veterans' PTSD	.104	.148	1.109	.969	1.276
Recovered	Intercept	−2.519	.001			
	Life events	−.026	.901	.974	.647	1.467
	Veterans' PTSD	**.237**	**.000**	**1.268**	**1.114**	**1.442**
	Intercept	−4.254	.000			
Chronic	Life events	.270	.296	1.310	.789	2.175
	Veterans' PTSD	**.241**	**.005**	**1.273**	**1.076**	**1.505**

Standard errors and Wald's values, degree freedom (d.f.), *p* Values (Sig.) and odd ratios (Exp[β]), plus 95% confidential Intervals. *p* Values < .05 are significant. Diagnosis is outcome variable with three levels. Bold letters mean statistical significance.

that, although traumatic events can be pathogenic, most spouses do not suffer from high levels of psychopathology as a result of their indirect exposure to trauma (Bonanno et al., 2012). However, the understanding of indirect trauma response variability, including resilience, is lagging. Recent studies have suggested that spouses' recognition of PTSD symptoms, access to resources (Zwanziger et al., 2017), and social support (Sinclair et al., 2019), may contribute to veterans' spouses' resilience.

In addition, while delayed-onset PTSD has been the subject of controversy (Horesh et al., 2013), our findings support its validity in the wake secondary exposure (9.7% of spouses). Although multiple studies have observed delayed-onset among direct trauma survivors (Andrews et al., 2007), this study confirmed its occurrence among those who experience ST as well, emphasizing the importance of longitudinal assessments. Possible explanations for the relatively high level of delayed-onset might be associated with living in Israel, where there are intensive periods of war and terror. Indeed, our results found that this group experienced more such traumatic life events. Furthermore, delayed distress could also be associated with their own and their partner's aging processes (Lapp et al., 2011).

In predicting the spouses' trajectories, three factors were examined: veteran's PTSS, spouse's perception of the veteran's PTSS, and spouse's own traumatic life events. Examining the veteran's distress allowed us to observe the basic ST premise that spouse's distress results from veteran's distress. We also examined whether wives' perceptions and personal trauma histories play a role in the development of their ST. To the best of our knowledge, our study was the first to examine these three mechanisms simultaneously. Our findings lend support to the idea that each predictor plays a contributing role.

Indeed, veterans' higher PTSS in earlier measurements predicted spouses' higher ST. Namely, this was found among the wives in the delayed-onset, chronic, and recovery groups compared to the wives in the resilient group. These findings suggest that living with a veteran who has PTSS can have contagious effects. This may be particularly true for an aging sample such as ours, since living for 4 decades with a veteran who suffers from PTSS was found to be associated specifically with higher ST as manifested in PTSS. The basic explanation for this phenomenon is derived from the premise that a wife's desire to care for and

empathize with her husband may lead her to become "infected" with her husband's symptoms, as suggested in families (Figley, 1989). This phenomenon has also been found to occur among therapists of trauma survivors (McCann & Pearlman, 1990). Additional explanations include the burden that these women take on (Dekel et al., 2005b) or losses associated with ambiguous family boundaries and daily functioning difficulties (Dekel et al., 2016).

Indeed, PTSD among veterans has been conceptualized as an ambiguous loss whereby the husband is physically present but psychologically absent, which has been associated with boundary ambiguity within his family (Dekel et al., 2005a; Faber et al., 2008). Consequently, spouses have reported not knowing what the veterans' roles were within the family system and being unclear as to who was responsible for which tasks and roles (Dekel et al., 2005a). Moreover, boundary ambiguity served as a mediator between the veteran's PTSS and the spouse's adjustment, as manifested in PTSD, functioning, and mental health (Dekel et al., 2016).

Furthermore, current models have suggested that these are not unidirectional effects (i.e., from the veteran to his spouse) but rather mutual influences. The cognitive–behavioral interpersonal model of PTSD suggests that trauma survivors' behaviors, emotions, and cognitions interact with each other and, in turn, affect and are affected by the same constructs in their partners (Monson et al., 2010). These effects can take place directly (e.g., veterans' behavior leading to a cognitive interpretation and subsequent emotion in their partner) or indirectly, via an effect on the relationship (e.g., survivors' withdrawal leading to reduced intimacy that, in turn, impacts partners' individual emotions, cognitions, and behaviors).

In addition, spouses' perceptions of veterans' PTSS were found to contribute to spouses' ST. These findings support the model, which suggests that partners' understandings and attributions of veterans' PTSS and associated behaviors play an important role in the partners' development of symptoms of distress (Renshaw, Blais, et al., 2011). Partners' reports of veterans' symptoms provide a window into their overall perceptions of veterans' functioning. Such perceptions may be influenced by a number of factors, including the partner's observations of behavior, interpretations of communication from the veteran, relationship difficulties, their own biases and tolerance of ambiguity. This is in line with previous findings showing that partners are less distressed by symptoms and behaviors if they are able to interpret them as reflecting a

disorder (i.e., PTSD; Renshaw, Blais, et al., 2011) rather than a personality trait, intentional aggressive behavior, and more.

Our findings suggest that the combination of being exposed to a veteran's PTSD-related emotions, cognitions, and behaviors, and ascribing meaning to them, contributed to spouses' ST. This finding provides support for the broader model of multiple interaction effects between a veteran's PTSS and his spouse's distress. It also suggests that the attributional model posited by Renshaw, Allen, et al. (2011) might be an example of a specific individual cognitive process that can affect a partner's emotional reactions and distress. Moreover, it is in line with the approach that emphasizes the way trauma is subjectively perceived and represented by the person in his or her inner world (Foa et al., 1999). This method describes the inner introspective view and general perspective individuals develop about their or their partner's traumatic condition (Palgi et al., 2021).

Finally, although the contribution of the wives' traumatic life events to their ST trajectories was not significant, there was a significant difference in the number of life events between the trajectory groups. However, it should be noted that although the number of traumatic life events was measured, we did not differentiate between type, severity, and exact timing of the occurrence in relation to the wives' life course (Spence et al., 2019). Using a binary checklist-style approach to identify events, as we did, may have resulted in limited information. Thus, this perspective needs to be broadened, and traumatic events should be considered along a spectrum (i.e., from lesser to greater threat/severity). A recent conceptualization has also suggested considering the dimensions underlying a cross-spectrum of events, including loss (e.g., of person, role, plan, or ideas about the self), danger (e.g., future loss/threat to security), humiliation (e.g., devaluation of self/rejection), and entrapment (e.g., sense of imprisonment) to further categorize events, and specify their likely impact (Spence et al., 2019). This could also suggest that the events themselves are not significant, but rather the emotional vulnerability and ways the partner reacts to or perceives the symptoms as a result of earlier events, as we noted earlier.

The findings of this study should be considered in light of several limitations. First, an initial assessment conducted within the first years following the war was lacking. Second, although widely used and well-validated, the reliance on self-report questionnaires to identify PTSD could be subjected to potential self-reporting bias. Third, the generalization from these results to other populations should be made cautiously as the sample was comprised of male veterans and their female spouses who underwent a specific stressor, live in a particular culture, and are in the aging process, which might affect the results. Finally, future studies should include a more accurate and encompassing measurement of life events that would enable a more nuanced understanding of their longitudinal contribution to ST and also examine the role of both spouses' personality and coping strategies (Weinberg, 2011).

Our findings have multiple clinical implications, including highlighting the need for clinical care at both the individual and couple levels. First, direct support for spouses of war veterans with PTSD is clearly needed. Given that some spouses suffer from chronic ST, and others from delayed, there is a need for ongoing assessments, recognition, and support services. Moreover, our findings indicated a strong association between spouses' distress and the contribution of the veteran's PTSD to his spouse's ST,

strengthening the call for a systemic, couple perspective. Research has suggested that both partners' symptoms reciprocally influence the risk of intimate relationship dysfunction (e.g., Creech et al., 2019). As such, the development and evaluation of interventions aimed at alleviating both individual and couple-level distress may be warranted. For example, cognitive–behavioral conjoint therapy for PTSD might be relevant as it is a couple-level intervention for PTSD associated with decreased psychological distress for both partners as well as a reduction in relationship distress (for a review, see Fischer et al., 2016).

Finally, our study contributes to the field in a number of ways. First, it presents a trajectory perspective on spouses' ST, thus capturing more variability than a continuous binary perspective. Second, it adds a longitudinal design to the understanding of spouses' ST. Last, it validates spouses' secondary traumatization as manifested in PTSS and provides a more comprehensive picture of its development and contributors, as well as a better understanding of the reciprocal association between couples' PTSS distress.

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